LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

Structure of the Plesiosaurian Skull.

IT is somewhat remarkable, that, in a group of fossil reptiles like the plesiosaurs, the nature and structure of the skull should have remained for so long a time practically unknown. Fragmentary remains of this very important part of the skeleton are not rare in collections, but none sufficiently complete to make out any thing at all satisfactory of its anatomy have hitherto been described. Very fortunately the museum of the Kansas University has recently been enriched by the skull and a large part of the neck of one of these animals, in most remarkably perfect preservation, collected from the Kansas Niobrara cretaceous by Judge E. P. West, assistant in paleontology at the State University. Recognizing the value and rarity of the specimen, Mr. West used the most scrupulous care in removing and shipping the specimen, and, as now cleaned from its matrix in the museum, it permits most of its structure to be made out with certainty and ease. I have in preparation a full description of the specimen, with illustrations, which will shortly be published in the "Transactions of the Kansas Academy of Sciences." Meanwhile, however, the very great importance of the find renders a brief description of its chief characters at the present time very desirable.

The species I refer provisionally to the genus *Cimoliosaurus*, though certain characters, as will be seen, do not accord with those given by Lydekker in his recent "Catalogue of Fossil Reptilia." The specimen lies upon its side, with twenty-six vertebræ in position; and all, save some of the posterior vertebræ, which were exposed, are in perfect preservation. The cervical vertebræ have the arches and riblets fully co-ossified with no or but very slight traces of their sutural attachments. There is but a single rib attachment, and the zygosphene is rudimentary. The spines are short; the anterior centra, gently cupped; the posterior ones, which increase gradually in slenderness, more deeply so. The parietal bone forms a roof-shaped covering, ascending into a high, thin sagittal crest two or three inches above the brain-case: there is no parietal foramen. There is but one temporal arcade, a broad bar passing directly backward, on a line with the maxilla, to unite with the lower part of the quadrate. The limits of the quadrato-jugal have not yet been satisfactorily made out. The post-orbital is a slender bone uniting broadly with the jugal below, and has no connection with the slender squamosal. There is apparently no post-frontal. Lying within the comparatively small orbit are eleven or twelve sclerotic plates, touching each other at their edges, and forming the larger part of a ring, a few having been misplaced. The mandibular symphysis is short, and the two sides are so firmly co-ossified that I have found no trace of the suture. There are about twenty teeth in each jaw, extending far back, the anterior ones very much larger than the posterior ones; in the locked jaws the upper ones reaching nearly to the lower margin of the stout mandible. A part of a single bone was found between the jaws, which I believe to pertain to a hyoid.

I need not point out the importance of the foregoing characters. Others scarcely less interesting will be given later. The ones here given, however, are nearly all in conflict with generic, family, ordinal, or even super-ordinal characters hitherto accepted. The sclerotic plates are the first ones described for any of the *Synaptosauria*, a branch comprising the *Chelonia* and *Sauropterygia*.

The species can be located with neither *Polycotylus* or *Elasmosaurus*, the two genera of the American cretaceous hitherto described as having co-ossified neural arches. I place it, however, under *Cimoliosaurus*, in Lydekker's acceptation, and shall describe and figure it under the name *C. Snowii*, in honor of Chancellor F. H. Snow, who has done so much for the development of the natural-history department of our university. I append a few measurements: length of skull from occipital condyle to top of premaxilla, 18 inches; greatest height of skull to top of parietal crest, 9 inches; length of centrum of second cervical vertebra, 1⅝ inches; height of centrum of second cervical vertebra, 1⅝ inches; height of spine above centrum, same vertebra, 2½ inches; length of centrum of eighteenth cervical vertebra, 2¾ inches; height of centrum, same vertebra, 2 inches; length of centrum of twenty-fifth cervical vertebra, 3⅝ inches.

S. W. WILLISTON.

University of Kansas, Oct. 25.

On the Characters and Systematic Position of the Large Sea-Lizards, Mosasauridæ.

A NEARLY complete skeleton of one of the mosasauroid reptiles, collected during the summer in the cretaceous of Kansas, enables me to give full characters of this family, and to determine absolutely its relations.

The skull is nearly, in every respect, of the pattern of the *Varanidæ;* the premaxillaries co-ossified with nasals, forming a single bone; frontals single, but indications of former division in front; parietals single; post-orbital arch complete,—a bony postorbito-quadrate arch. This arch is formed by the postfronto-orbitals, which are free from each other in young specimens, and by the quadratojugal (squamosal); pterygoids and palatines separated, pterygoids with teeth; vomers separated behind, connected in front; a small ecto-pterygoid (transverse bone); infra-orbital fossa as in *Varanidæ;* nasal opening formed by naso premaxillary, frontal, prefrontal, maxillary; orbits formed by prefrontal, jugal, postfronto-orbital, and a very small portion of the frontal; epipterygoid as in *Varanidæ;* no ossified alisphenoid; par-occipital (opisthotic) co-ossified with ex-occipital; petrosal (pro-otic) suturally united or co-ossified with ex-occipital and par-occipital; quadratojugal, squamosal, par-occipital, and quadrate, exactly in the same relations as in *Varanidæ;* lower jaw as in *Varanidæ*.

I have to mention here the important fact that the *Varanidæ* and *Helodermatidæ* have, like the *Mosasauridæ*, the peculiar articulation in the middle of each ramus, which enables these animals to extend the lower jaws considerably. The shoulder-girdle is between that of *Varanidæ* and *Helodermatidæ*. There is a very well developed interclavicle, a little divided at the proximal end. The clavicles are small and slender.

From all this it is evident that the *Mosasauridæ* are very closely related to the *Varanidæ*. They simply represent highly specialized aquatic forms. The enormous size of some of the *Mosasauridæ* has to be explained by that fact. I may remark here, however, that some fossil *Varanidæ* (*Varanus*) [*Megalonia*] *priscus*, Owen, for instance) from the pleistocene of Queensland reached a length of thirty feet. The *Helodermatidæ* belong to the same group, but the *Mosasauridæ* are very much nearer to the *Varanidæ*. For this group I retain the old name *Platynota*, and divide it into two superfamilies, — (*a*) *Varanoidea*, 1. *Varanidæ*, 2. *Mosasauridæ;* (*b*) *Helodermatoidea*, 1. *Helodermatidæ*.

A full account of the *Mosasauridæ*, with figures, will soon be published.

G. BAUR.

Clark University, Worcester, Mass., Oct. 29.

Two New Species of Tortoises from the South.

THROUGH the kindness of Mr. Gustave Kohn of New Orleans, La., I have received for examination a splendid collection of *Testudinata* from the Southern States: Louisiana, Florida, Alabama. This collection contains two new species of *Malacoclemmys*.

1. *Malacoclemmys oculifera* (*sp. nov.*).—This is one of the most beautiful of the American tortoises, and it is certainly very remarkable that it has not been described before. It was labelled *M. Lesueuri*, but it is totally different from that. The shell is broader and higher. The bony tubercles on the vertebral plates are more developed. Each of the dermal scutes of the carapace contains a yellow ring, bordered on the inside and outside with dark olive-brown. These rings are especially well developed on the costal scutes. This condition induced me to propose the name *oculifera*. The plastron is yellow, but with markings very much like *Chrysemys bellii*, Gray. The color of these markings is like the carapace, olive-brown. The head is entirely different from that of any of the described forms of *Malaco-*